

## ABSTRACT OF THE DISCLOSURE

An alternator system having an alternating current (ac) voltage source includes a switched-mode rectifier (SMR) coupled to the ac voltage source and having an output port  
5 coupled to an output of the alternator system, and a controller coupled to said switched-mode rectifier so as to provide a controlled pulse sequence synchronized with an angular rotor position of the (ac) voltage source to activate and deactivate the switched-mode rectifier. The controller further includes a PWM generator having a first input to receive a total duty ratio signal synchronized with an angular rotor position of the (ac) voltage source. The  
10 switched mode rectifiers are controlled to increase power output levels at lower speeds near idle. The controller combines improved idle speed power output levels with load matching improvements from PWM control for more efficient operation when compared to circuits using conventional control or PWM load matching control alone.

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